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Theory and PIC Simulations on the Competition Between SBS and SRS*

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Recent experiments using the NOVA laser have shown that there is a strong anti-correlation between SRS and SBS. We present some simple models that help understand the interplay between the two instabilities. In particular, we investigate the effect of ion waves (generated by the SRS instability) on the growth of SBS. These ideas are then tested using both a nonlinear fluid model, and a PIC simulation code. We find that ion waves generated by the Langmuir decay of SRS driven plasma waves can significantly reduce the SBS reflectivity.

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